

# Backyards to Biolinks: The Role of Royal Botanic Gardens Cranbourne in Urban Greening

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Photography by Janusz Molinski, courtesy of Royal Botanic Gardens Cranbourne

## A New Role For Botanic Gardens

The Royal Botanic Gardens (RBG) Cranbourne is located on Melbourne's urban fringe, 45 kilometres south of Melbourne's central business district. Unlike many capital city botanic gardens, RBG Cranbourne comprises a large area of highly valuable and significant conservation land alongside a contemporary landscape display of Australian plants, called the Australian Garden. Together, these areas cover 363 hectares and provide examples of both intact, remnant indigenous ecosystems and a created garden showcasing the beauty and diversity of Australia's remarkable flora. Scientific research carried out by the gardens is used to inform an adaptive management approach to the conservation of the natural areas on site, and is also utilised to encourage the creation of sustainable urban landscapes in the residential development that surrounds the gardens.

As well as providing a key leadership role in landscape management in our region, the RBG has an important role in commu-

nity education. The inspiration and education provided through the Australian Garden display and programmed public activities on the site aim to foster the creation of sustainable home gardens using native plants in our local community. In providing this community education role, the RBG contributes to sustainable land management, albeit on a different scale, beyond its boundary. Community education and strategic partnerships are key strategies in influencing, informing, and encouraging urban greening in public and private landscapes and an important future role for botanic gardens.

The urban growth corridor to the south-east of Melbourne is one of the fastest developing growth corridors in the southern hemisphere. Rapid urban expansion always brings challenges for planning authorities in balancing the needs of different stakeholders—from housing densities, infrastructure needs, the allocation of public open space, to the conservation and enhancement of biodiver-

sity values. Given that much of the land being developed is on RBG Cranbourne's doorstep, the gardens have a vested interest in ensuring that the development occurs in a way that the threats posed to its ecological and amenity values are minimised. Without the appropriate reservation of land beyond its boundary, RBG Cranbourne risks becoming "land locked" by residential development and potentially isolated from surrounding biodiversity. On a broader agenda, RBG Cranbourne's role is to utilise its core functions of scientific research, horticultural display, and education to strive to create greener neighbourhoods that are better able to support plants, animals, and human inhabitants in communities that are sustainable in the future.

## Biodiversity and Biolinks

The land for RBG Cranbourne was acquired over a 27-year period from 1969 to 1996, two-thirds of the site having been protected from vegetation clearing due to being "locked up" as a Commonwealth Defence reserve since



ABOVE The Red Sand Garden is a key feature of the Australian Garden.

1889. Under this reservation status, the natural bushland was protected while the surrounding areas were cleared for agricultural, quarrying, equestrian, and residential development purposes. The result is that two-thirds of the property is covered in remnant, indigenous vegetation—250 hectares of high-quality, healthy, and grassy woodland and wetlands—making it one of the largest and most intact tracts of native vegetation in the Melbourne region. In terms of conservation significance, the site includes six different vegetation communities, 370 species of indigenous plants, 20 native mammal species, 160 native bird species, 18 native reptile species, and 11 native amphibian species, with over 30 species of plants and animals declared to be of “state conservation” significance, and three nationally endangered plant and animal species. Outside the boundary fence of RBG Cranbourne, isolated patches of native vegetation remain and continue to be impacted by anthropogenic disturbance. In essence, RBG Cranbourne and other remnant patches

are becoming islands of habitat in a sea of cleared urban and agricultural landscape.

The isolation of patches of habitat restricts the dispersal of fauna and flora species, making them more vulnerable to the risk of population extinction. Retaining or recreating ecological connectivity between these patches is critical for their continued ecological viability. Habitat corridors, or biolinks, can provide a connection or land bridge between patches and facilitate the physical movement of species as well as genetic mixing over time, contributing to more robust and resilient flora and fauna communities. Without biolinks, isolated ecological communities are more prone to the negative impacts of predation by pest animals, cats and dogs, fire and flood events, and changing habitat conditions, including those driven by climate change. RBG Cranbourne is working with planning authorities and government departments to ensure that suitable biolinks are incorporated into the adjacent land developments, to keep

it ecologically connected with the world around us.

With regard to the establishment of biolinks, the lynchpin for RBG Cranbourne is the presence of a robust population of Southern Brown Bandicoots—a small terrestrial mammal that is a threatened native species and is protected under Commonwealth legislation. Research by RBG Cranbourne staff has been undertaken to record the presence of this species, both within the gardens and immediately outside the predator-proof fence line of its boundary (approximately eight kilometres of fence line). The fence is monitored every week for holes and breakages to control the invasion of feral animals, particularly foxes, cats, and dogs. In addition, European Red Fox eradication programmes are implemented regularly, including those areas immediately outside the boundary fence—with the permission of local land-owners. Under this regimen, the Southern Brown Bandicoot has increased its population numbers within RBG

Cranbourne and has the potential to migrate to suitable habitat precincts within the region. The challenge is how to facilitate the establishment of the connecting biolinks between RBG Cranbourne and its surrounding biodiversity hotspots.

While the general importance and benefits of habitat connectivity and biolinks is well documented in Australia, when RBG began this process, there was a lack of a systematic guide to the design of biolinks. From 2009 to 2010, the RBG worked with an ecological consultant to bridge this gap and develop a process that would inform a recommended design for biolinks in the region. This process included an international review of literature in the field, the identification of species requirements locally, and a quantitative assessment of potential biolink options. The recommended design incorporated: habitat requirements of selected fauna species (including the Southern Brown Bandicoot); edge effects, open space, and fire protection requirements and ecological buffers; overall corridor width; and management and resource requirements and feasibility. This design formed part of the formal submission made to the planning authority by RBG Cranbourne as a key stakeholder. The extent to which the biolink designs are incorporated will become apparent as the planning process takes its course through consultation and decision making. RBG Cranbourne has endeavoured to provide a robust scientific perspective towards the achievement of an ecologically sustainable outcome.



ABOVE The Trig Point Lookout commands expansive views of the surrounding region.

### Home Gardens As Sustainable Landscapes

The viability of ecologically functioning green spaces is critical to the health of new suburbs both in terms of ecology and human well-being.<sup>1</sup> The espoused principles of ecosystem services apply—benefits related to air and water quality, air and surface temperature moderation, passive recreational opportunities, and social and spiritual benefits all point to the good sense of striving to conserve and enhance green space in developing urban areas. While biolinks and public green space are important for landscape connectivity and ecological viability, the role of home gardeners as land managers is often under-recognised.

As George Seddon points out, home gardeners are important land managers as they own 50 percent of the privately owned property in Australia.<sup>2</sup> So the attitudes and actions of the home gardener are central influences to the shaping of suburban landscapes.

The Australian Garden at RBG Cranbourne is a stunning contemporary showcase of Australian landscapes and plants, and provides inspiration and education on how to use Australian plants to create sustainable gardens at home. The need for a purely Australian display stems from the historical predominance of



ABOVE Community engagement starts at an early age.

Euro-centric influence on gardening resulting from the relatively recent colonial development of Australia. Australian gardeners have tended to look offshore for their inspiration in landscape design and plant selection—in essence, recreating home gardens that are reminiscent of their country of origin. Plant selection has also been strongly driven and influenced by the availability of plants in retail nurseries, which has also tended to favour fashionable exotic plants. This is despite having a unique, diverse, and beautiful flora, often better adapted to local conditions and more suited to providing habitats for local fauna. National pride has long been strong in Australia, but its expression in plant selection has been somewhat patchy. It could be said that, over the years, Australians have had a number of love affairs with Australian plants, rather than an enduring relationship. But that attitude is changing—our desire to engage with Australian plants appears to have been rekindled, as exhibited by the success and interest in the development of the Australian Garden at RBG Cranbourne.

The Australian Garden has won both state- and national-level awards for its landscape design and as a new tourism destination in Australia. The first stage opened in 2006 and covers nine hectares. It features a series of iconic Australian landscapes that reflect the diverse and sometimes remote regions of Australia. It exemplifies the fact that Australia is an ancient continent, with skeletal, low-nutrient soils and unpredictable rainfall. It provides a sub-text to explain the reason why Australia has developed such a unique indigenous flora. The design was created by the landscape architects Taylor Cullity Lethlean in association with plant designer Paul Thompson. Their research and design interpretation has provided a horticultural richness and architectural structure that are appealing to a new audience.

When visitors first arrive at the Australian Garden, they are met with a scene of Australia's arid centre called the Red Sand Garden. This is the signature feature of the garden, and is emblematic of the red desert heart of Australia. Further interpretive landscapes

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trace a metaphoric “journey of water” from this arid heart to the coast, through displays such as the Rockpool Waterway, the Riverwalk, and the Melaleuca Spits and Seaside Garden. The displays are artistic interpretations of Australia's diverse and spectacular landscapes and aim to connect visitors with the land on many levels—artistic, intellectual, scientific, cultural, emotional, and spiritual. Complementing these spaces is a series of display gardens relevant to a domestic garden situation, designed in response to a number of themes. These include the Water Saving Garden, the Future Garden, the Home Garden, and the Kids' Backyard. Each garden provides a new interpretation of a topic, such as low water availability, habitat creation, use of recycled materials, or gardens as play spaces. Information on garden design, plant selection, and cultivation, delivered both face-to-face and by signs, assists visitors to be inspired to create home gardens that will respond to their local landscape and environmental situation. This approach is attracting both seasoned gardeners, who are looking for fresh ideas, and new gardeners or tourists,



ABOVE RBG Cranbourne's significant ecosystems, and the Australian Garden, are being surrounded by urban development.

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ABOVE Australian Garden Stage 2 will open in late 2012.

who are drawn to the beauty of the Australian plants. One of our key audiences are the thousands of homeowners in the new suburbs of south-eastern Melbourne.

In terms of community education, it is important that the Botanic Gardens influences both the selections made by home gardeners and the products selected to be put up for sale by retail nurseries. To further this goal, the RBG has created, in partnership with plant growers and retailers, an endorsed collection of plants called the “Australian Garden Collection” that highlights a number of the plants in the Australian Garden that are most suitable for Melbournian home gardens. We have also partnered closely with our local council, the City of Casey, to extend the community education messages and information into the new residential developments around the gardens. Strategic partnerships with the industry and government are an important part of extending its reach and effectiveness.

Due to the success of Stage 1 of the Australian Garden, the second and final stage of this project (a further nine hectares) is under construction and will be opened to the public

during the spring season of 2012. This will include additional display gardens incorporating a demonstration green wall and green roof, more examples of innovative uses of Australian plants suitable for home gardens, and spaces to cater to our increasing numbers of student (currently around 10,000 students undertake programmes each year) and public programmes.

### Our Future Focus—Urban Greening

Botanic gardens worldwide have an increasingly important role to play in not just positively influencing the conservation of indigenous flora but also the creation of sustainable new landscapes in the public and private realms. Through a mixture of scientific research, contemporary horticultural displays, and education, the RBG Cranbourne strives to assist its surrounding communities to embrace urban greening as a core value and activity. Key to this drive are the gardens’ multi-layered approach to community education and the development of strategic partnerships. The future focus of botanic gardens is beyond its boundary, supporting the community in building the capacity to create sustainable and biologically rich habitats for humans. 

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